Amendments to the Claims

The following listing of claims will replace all prior versions and listings of the claims in the application:

Claims 1-21 (canceled).

Claim 22 (new): A computer-implemented system for analyzing nuclear magnetic resonance data, wherein the data contains at least one relaxation signal of a sample, the system comprising:

at least one analyzing means that separates the data into at least two parts that are differently dependent on an echo time T_E.

B2 cont'd

Claim 23 (new): The computer-implemented system of claim 22, wherein said analyzing means separates the data into at least one part that is dependent on the echo time T_E and into at least another part that is not dependent on the echo time T_E, and said analyzing means acquires the data that is dependent on the echo time T_E as activation signals.

Claim 24 (new): A nuclear magnetic resonance tomograph comprising:

a computer-implemented system for analyzing nuclear magnetic resonance data, wherein the data contains at least one relaxation signal of a sample, said computer-implemented system including at least one analyzing means that separates the data into at least two parts that are differently dependent on an echo time T_E.

Claim 25 (new): A computer-implemented method for analyzing nuclear magnetic resonance data, wherein the data contains at least one relaxation signal of a sample, the method comprising:

separating the data into at least two parts that are differently dependent on an echo time T_E.

Claim 26 (new): The computer-implemented method of claim 25, wherein the separating step comprises separating intensity values of the data into at least two parts that are differently dependent on the echo time T_E.

B2 Cont'd

Claim 27 (new): The computer-implemented method of claim 26, further comprising calculating a statistical variation of the intensities.

Claim 28 (new): The computer-implemented method of claim 27, further comprising calculating a standard deviation of the intensities.

Claim 29 (new): The computer-implemented method of claim 25, wherein the separating step comprises separating the relaxation signal into at least one part that is dependent on the echo time T_E and into at least another part that is not dependent on the echo time T_E.

Claim 30 (new): The computer-implemented method of claim 25, further comprising calculating at least one signal that is proportional to $T_E \exp(-T_E / T_2^*)$.

Claim 31 (new): The computer-implemented method of claim 30, further comprising calculating T_2^* with the formula $S = S_0 \exp(-T_E / T_2^*) + g$.

Claim 32 (new): The computer-implemented method of claim 25, further comprising calculating statistical fluctuations of ΔT_2^*.

Claim 33 (new): The computer-implemented method of claim 32, further comprising calculating a standard deviation $\sigma(\Delta T_2^*)$.

B2 Cont'd

Claim 34 (new): The computer-implemented method of claim 33, further comprising calculating a quotient $\sigma(\Delta T_2^*) / T_2^*$ that represents a measure of an activity.

Claim 35 (new): The computer-implemented method of claim 25, further comprising calculating a statistical deviation of an initial intensity S_0.

Claim 36 (new): The computer-implemented method of claim 35, further comprising calculating a standard deviation $\sigma(\Delta T_2^*)$.

Claim 37 (new): The computer-implemented method of claim 36, further comprising calculating a quotient $\sigma(\Delta S_0) / S_0$.

Claim 38 (new): The computer-implemented method of claim 25, further comprising calculating a statistical fluctuation of a noise signal g.

Claim 39 (new): The computer-implemented method of claim 38, further comprising calculating

a standard deviation σ(g) of the noise signal g.

Claim 40 (new): The computer-implemented method of claim 25, further comprising acquiring the data in a two-dimensional field, wherein a field axis (DTE) acquires the echo times T_E, and another field axis (DTR) reproduces repetitions of excitations at a time interval T_R.

B2 end

Claim 41 (new): The computer-implemented method of claim 40, further comprising calculating a standard deviation $\sigma(\Delta T_2^*)$ and a standard deviation σ(g) of a noise signal g using the following steps:

(i) averaging signals over DTR to an exponential decay as a function of DTE and determining S_0 and T_2^*;

(ii) calculating $\sigma(\Delta S_0)$, $\sigma(\Delta T_2^*)$ and σ(g) for several voxels and different T_E, followed by averaging these values over at least one region of interest (ROI);

(iii) calculating

$$\frac{\sigma(\Delta S)}{S_0} = \left\{\left[\left(\frac{T_E}{T_s^*}\right)^2\left(\frac{\sigma(\Delta T_2^*)}{T_2^*}\right)^2 + \left(\frac{\sigma(\Delta S_0)}{S_0}\right)^2 - 2\frac{T_E}{T_2^*}\frac{(\Delta S_0 \Delta T_2^*)}{S_0 T_2^*}\right]\varepsilon^{-2T_E/T_2^*} + \left(\frac{\sigma(g)}{S_0}\right)^2\right\}^{1/2}$$; and

(iv) determining $\sigma(\Delta S) / S_0$ as a function of T_E.

Claim 42 (new): The computer-implemented method of claim 41, wherein the expression $< \Delta S_0 \Delta T_2^* >= 0$ is used for the calculation of $\sigma(\Delta S_0) / S_0$.